with an imperfectly organized, frequently fungous, granulation tissue. It is from this central, peri-urethral cavity, the primary result of urethral rupture, that the fistulæ radiate.

Clinically, patients suffering from fistulæ can be relegated to one of the following classes:

1. Those in whom the perineum is nearly normal, and who suffer from a single fistula.
2. Those in whom there is a more or less extensive tumefaction and induration, with several fistulous openings.
3. Those in whom there are multiple weeping fistulæ, with numerous indurated, irregular proliferations developed about the openings.

In the first class of cases, the normal calibre of the urethra having been restored by dilatation or internal urethrotomy, the galvanic cautery or strong tincture of iodine applied along the ulcerating tract will usually suffice for a cure, without the need of continued or intermittent catheterism.

Although it is at times possible to cure the cases coming under the second and third classifications by the same means, this is rarely accomplished. These cases should be placed in the obstetrical position, and thoroughly examined. The whole perineum is carefully palpated. If the urine contains pus and runs freely from the fistulous orifices, the existence of a central cavity is certain. If, however, urine only escapes on pressure, the passage to the urethra may be direct, and cauterization may be tried with some hope of success. In the majority of these cases, however, a formal operation is required. A median incision should be made into the perineum, and a careful dissection should be made till the central cavity is exposed. The position of the urethra should be then determined by feeling for its cord-like continuation, or by means of a sound passed from the meatus into the bladder. Then all the fistulous tracts should be laid fully open, either by cutting from within outward or the reverse. After which the fibrous walls of the central cavity are entirely removed by means of the knife or scissors. This may necessitate an enormous wound, but the surgeon need have no anxiety on this score, as it will be completely closed in by granulations.

In the treatment of urinary extravasation Guyon insists, as a means of avoiding subsequent fistulæ, upon entering the knife to the very depth of the urinary accumulation till it is in close relation with the urethra. A drainage tube should be carried to the bottom of this wound, and left in place for several weeks.

OPERATIVE TREATMENT OF INCONTINENCE OF URINE.

An ingenious and novel treatment for the cure of obstinate and persistent urinary incontinence, is described by GERSUNG (*Centralblatt für Chirurgie*, No. 25, 1889). This treatment was successfully applied in the case of a girl aged fourteen years, suffering from incontinence since birth. Examination showed a split and patulous condition of the urethra. There had been an operation performed when the patient was one year old, entirely unsuccessful in its result. In the recumbent position the urine could be retained for a short time, and voluntarily discharged, but when the patient was up and about there was a constant dribbling. At first an attempt was made to diminish the calibre of the urethra by excising a longitudinal strip of its mucous membrane, and restoring the continuity of the canal by suture. For three days there was decided improvement, due, undoubtedly, to inflammatory swelling, but on the fourth day, and thereafter, the condition was precisely the same as before. Six weeks later Pawlik's procedure of excising a wedge-shaped piece from the surrounding connective tissue, so that subsequent cicatricial contraction should provide an elastic occluder, was suggested and carried into effect, with so much success that the urine could be retained for two hours. Five years later the patient again returned to the hospital for treatment. In the sitting posture she could retain her water for an hour, but when standing or walking, and often even while lying down, there was constant dribbling. Apparently the only thing left for this unfortunate was a complete occlusion of the urethra, together with supra-pubic puncture of the bladder and the establishment of a fistula. Before resorting to this, however, an entirely new operation was devised and successfully executed. A crucial incision was made about the external orifice of the urethra, the latter was dissected out, together with a somewhat thick layer of surrounding connective tissue, to the extent of nearly an inch, was twisted upon its long axis 180 degrees, and was then sewed in this position. Seven days later the stitches were taken out; there was some little sloughing about the urethral orifice, but the new position was maintained. There resulted decided improvement; while lying or sitting the urine could be retained several hours, but on standing there was still a constant dribbling. Three weeks later the urethra was freed for nearly a half inch of its length, twisted 90 degrees further in the same direction as before, and again sutured in this position. There was retention for two days, but after that the water could be passed voluntarily. The improvement was not marked; in the erect position the urine could not be retained more than ten minutes. A month later the urethra was freed as before, but to a greater extent, again twisted 180 degrees and secured in place by seven silk sutures. Catheterization was required for a few days. Eight days after the operation all the sutures were removed. Healing *per primam.* At first urine was passed only by means of prolonged muscular effort, ten minutes being required for each emptying of the bladder. Four months after the operation the patient experienced an urgent desire to micturate at intervals of about five hours; the water passed slowly but without muscular effort, and she remained absolutely cured of her incontinence. The particular value of the operation lies in the fact that an elastic occluder is provided which can be readily and accurately modified by a simple operative procedure. The urethral mucous membrane is thrown into spiral folds which completely close the lumen of the canal at about its middle. This operation would seem to be particularly indicated in cases in which the vesical sphincter is anatomically or physiologically wanting. For its successful termination a functional activity of the vesical detrusors would seem necessary. Yet, were this absent, its place might be supplied by manual pressure, and it is by no means certain that cases of exstrophy of the bladder, which have been operated upon successfully, might not hope for continence of urine as a result of this urethral twisting.

The operation is, of course, easier in women than in men. If attempted in the male the urethra should be divided behind the bulb, the proximal end should be twisted, and the continuity of the tube should be restored by suture. It would be difficult to decide upon the precise amount of twisting necessary. Gersung advises that the urethra should be narrowed to the extent of opposing a slight resistance to the passage of a small catheter.

LIGATURE OF THE FEMORAL VEIN.

By a careful study of the literature bearing upon this subject MAUBRAC (*Arch. gén. de Méd.*, Jan. and Feb. 1889) endeavors to throw additional light upon the still disputed question as to the best operative treatment of wounds of the femoral vein. These cases should be grouped into two classes, namely, those in which the vein is injured in extirpation of tumors, and those in which it is accidentally cut or ruptured. In the first class of cases collateral circulation is, to a certain extent, established; indeed, the femoral vein may be completely obliterated without the appearance of the slightest œdema. The statistics of cases belonging to the first class are as follows:

1. Ligature of the femoral vein alone, twenty-one cases, with nine deaths; two of these deaths were due to septicæmia. There was no fatal issue due to gangrene.

2. Ligature of both inguinal vessels (artery and vein), ten cases. Six deaths, three from gangrene, three from septicæmia.

3. Ligature of the inguinal and deep femoral vessels. Nine cases, with a mortality of 100 per cent. Six cases died of gangrene, two of septicæmia, and one of pneumonia.

From these figures the following conclusions are drawn:

If, in the extirpation of a tumor in the inguinal region, the femoral vein is injured, both ends should be ligated. Simultaneous ligation of both femoral vessels produces a most dangerous disturbance of circulation. If the deep vessels are intact there is some hope of success, but on the first sign of gangrene amputation at the hip should be performed.

Of the cases of wound of the femoral vein suddenly and accidentally inflicted, but four instances are recorded in which the vein alone was involved. They all terminated fatally; two with and two without gangrene. Of three cases in which both femoral vein and artery were ligated, all recovered, amputation for gangrene being required, however, in two of these. Amputation for gangrene was required in three cases where, in addition to the common femoral vessels, the deep femoral artery and vein were tied; one terminated fatally. Ligature of the femoral vessels in various portions of Scarpa's triangle gave in twenty-five cases, gangrene twelve times.

From these figures Maubrac advises, in case of wound of the femoral vein, tamponade with iodoform gauze; if this fails, the vein should be secured by a double ligature, and the artery should be compressed in the inguinal region. If ligature of the artery is considered advisable, it should be performed below the origin of the profunda femoris.

In suitable cases the lateral ligation or suture is strongly commended; it is a means readily applied, requires only a moderate disturbance of surrounding connective tissue, increases the chances of healing by first intention, and preserves the lumen of the vessel intact. In four cases of lateral ligature, two were cured, two died of secondary hemorrhage and septicæmia. Three cases